

diameter. The helix angle achieved is about 55°. The mandrel is wrapped with the yarn in both directions to provide biaxial reinforcement. To hold the yarns in place, they are passed through a solution of solvated polyurethane elastomer, such as Biomer® solution, sold by Johnson & Johnson. The solvent is removed, causing the polyurethane to dry and glue the yarns together. After filament winding (see FIGS. 8 and 8a), the material is scoured in a basic solution of warm water (e.g., 120° F.) and detergent, followed by rinsing to remove the detergent. The prosthesis can then be attached to a stent fixation device and assembled into a catheter delivery system for delivery intraluminally or directly implanted.

In all four examples, the prosthesis may be of a straight, bifurcated or otherwise designed configuration.

Thus, while there have been described what are presently believed to be the preferred embodiments of the invention, those skilled in the art will realize that various changes and modifications may be made to the invention without departing from the spirit of the invention, and it is intended to claim all such changes and modifications which fall within the scope of the invention.

What is claimed is:

1. A method for intraluminally repairing a damaged lumen in a patient comprising:

delivering an expandable prosthesis to a site of damage in said lumen, said prosthesis being formed from a tubular substantially fluid-impermeable polymeric fabric having yarns which extend around the circumference of said fabric and which are sufficiently undrawn to allow for controlled inelastic radial expansion upon the application of a preselected radial force thereto; and

delivering an internal preselected radial force to said prosthesis sufficient to inelastically expand said prosthesis.

2. The method of claim 1, wherein said prosthesis is expanded via a balloon catheter.

3. The method of claim 1, wherein said prosthesis includes means for securing said prosthesis to said lumen.

4. The method of claim 3, further comprising the step of securing said expandable prosthesis to said lumen.

5. The method of claim 1, wherein said lumen is a blood vessel.

6. The method according to claim 1, wherein said prosthesis is delivered intraluminally to said damaged lumen via a catheter.

7. The method of claim 6, wherein said prosthesis is initially sized for intraluminal delivery via said catheter without need for rolling or bunching of said prosthesis.

8. The method according to claim 6, wherein said prosthesis is expanded until its diameter substantially conforms to that of said damaged lumen.

9. The method according to claim 1, wherein said patient is a child, and said prosthesis is surgically implanted in said child.

10. The method according to claim 9, wherein said prosthesis is expanded following a period of growth in said child until its diameter substantially conforms to that of a connecting host lumen which has experienced a period of circumferential growth.

* * * * *

WHAT IS CLAIMED IS:

11. A method for intraluminally repairing a damaged lumen in a patient comprising:
delivering an expandable prosthesis to a site of damage in said lumen, said prosthesis
formed from a tubular polymeric fabric and being a radially expandable tubular prosthesis which
allows controlled inelastic radial expansion; and
delivering an internal preselected radial force to said prosthesis sufficient to inelastically
expand said prosthesis.
12. The method of claim 11 wherein said expandable prosthesis further includes an expandable
stent circumferentially disposed interiorly or exteriorly of said prosthesis.
13. The method according to claim 11 wherein said prosthesis is expanded via a balloon
catheter.
14. The method of claim 11 wherein said prosthesis includes means for securing said prosthesis
to said lumen.
15. The method of claim 14 further comprising the step of securing said expandable prosthesis
to said lumen.
16. The method of claim 11 wherein said lumen is a blood vessel.

17. The method according to claim 11 wherein said prosthesis is delivered intraluminally to said damaged lumen via a catheter.

18. The method of claim 17 wherein said prosthesis is initially sized for intraluminal delivery via said catheter without need for rolling or bunching of said prosthesis.

19. The method according to claim 17 wherein said prosthesis is expanded until its diameter substantially conforms to that of said damaged lumen.

20. The method according to claim 11, wherein said patient is a child, and said prosthesis is surgically implanted in said child.

21. The method according to claim 20 wherein said prosthesis is expanded following a period of growth in said child until its diameter substantially conforms to that of a connecting host lumen which has experienced a period of circumferential growth.

22. A method of making a tubular expandable prosthesis comprising:

weaving two polymeric yarns together to form a tube; and

attaching an expandable stent circumferentially to said tube.

23. A method according to claim 22 wherein said stent is attached to an interior surface of said tube.

24. A method according to claim 22 wherein said stent is attached to an exterior surface of said tube.

25. A method of making a tubular expandable prosthesis comprising:

braiding three polymeric yarns together to form a tube; and

attaching an expandable stent circumferentially to said tube.

26. A method according to claim 25 wherein said stent is attached to an interior surface of said tube.

27. A method according to claim 25 wherein said stent is attached to an exterior surface of said tube.

28. A radially expandable prosthesis produced by the process of:

weaving two polymeric yarns together to form a tubular structure; and

attaching an expandable stent circumferentially to said tubular structure.

29. A radially expandable prosthesis produced by the process of:

braiding three polymeric yarns together to form a tubular structure; and

attaching an expandable stent circumferentially to said tubular structure.

31. The prosthesis according to claim 30 wherein said prosthesis includes an expandable stent circumferentially disposed interiorly or exteriorly of said prosthesis.

31. The prosthesis according to claim 30 wherein said prosthesis includes an expandable stent circumferentially disposed interiorly or exteriorly of said prosthesis.